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Cloud detection with the Earth Polychromatic Imaging Camera (EPIC)

Kerry Meyer^{1,2}, Alexander Marshak², Alexei Lyapustin², Omar Torres², and Yujie

Wang^{2,3}

¹Universities Space Research Association, Columbia, MD, USA

²NASA Goddard Space Flight Center, Greenbelt, MD, USA

³University of Maryland-Baltimore County, Baltimore, MD, USA

ABSTRACT

The Earth Polychromatic Imaging Camera (EPIC) on board the Deep Space Climate Observatory (DSCOVR) would provide a unique opportunity for Earth and atmospheric research due not only to its Lagrange point sun-synchronous orbit, but also to the potential for synergistic use of spectral channels in both the UV and visible spectrum. As a prerequisite for most applications, the ability to detect the presence of clouds in a given field of view, known as cloud masking, is of utmost importance. It serves to determine both the potential for cloud contamination in clear-sky applications (e.g., land surface products and aerosol retrievals) and clear-sky contamination in cloud applications (e.g., cloud height and property retrievals). To this end, a preliminary cloud mask algorithm has been developed for EPIC that applies thresholds to reflected UV and visible radiances, as well as to reflected radiance ratios. This algorithm has been tested with simulated EPIC radiances over both land and ocean scenes, with satisfactory results. These test results, as well as algorithm sensitivity to potential instrument uncertainties, will be presented.